

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

Paper No. 32

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* MITSUGU OGIURA and JUN TABOTA

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Appeal No. 2003-0176  
Application 08/909,590

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ON BRIEF

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Before OWENS, WALTZ and KRATZ, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

*DECISION ON APPEAL*

This appeal is from the final rejection of claims 1-8, which are all of the claims in the application.

*THE INVENTION*

The appellants claim an acceleration sensor which, the appellants state (specification, page 1, lines 4-7), is useful for an air bag installed in a vehicle. Claim 1 is illustrative:

1. An acceleration sensor comprising:

a piezoelectric element having at least three piezoelectric layers, a plurality of first electrodes and a plurality of second electrodes, said piezoelectric layers being stacked with each other in a thickness direction thereof so as to form a laminate having first and second opposed ends in a lengthwise direction thereof, said first and second electrodes being provided respectively and alternately at each interface between said piezoelectric layers and on top and bottom surfaces of said laminate such that said first electrodes extend from said second end toward but not to said first end and said second electrodes extend from said first end toward but not to said second end and partially overlap with each other via said piezoelectric layers; and

a support for holding said piezoelectric element at the vicinity of the said first and second ends of said laminate,

wherein said piezoelectric layers are polarized in the thickness direction thereof only at the region where the first and second electrodes overlap such that charges having opposite polarities are accumulated at said first and second electrodes, respectively, and the same polarity of charge is accumulated on at least one of said first and second electrodes by a pair of said piezoelectric layers in contact with the at least one of said first and second electrodes, when said piezoelectric element receives an impact in the thickness direction caused by an acceleration, said overlap area being selected to provide a desired output voltage and static capacitance.

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#### *THE REFERENCES*

Koal	4,499,394	Feb. 12, 1985
Harnden, Jr. et al. (Harnden)	4,670,682	Jun. 2, 1987
Kondou et al. (Kondou)	5,083,056	Jan. 21, 1992
Tabota et al. (Tabota)	5,515,725	May 14, 1996

#### *THE REJECTION*

Claims 1-8 stand rejected under 35 U.S.C. § 103 as being unpatentable over Tabota in view of Kondou and either Harnden or Koal.

#### *OPINION*

We reverse the aforementioned rejection. We need to address only claim 1, which is the sole independent claim.

The appellants' claim 1 requires "said first and second electrodes being provided respectively and alternately at each interface between said piezoelectric layers ... said first electrodes extend from said second end toward but not to said first end and said second electrodes extend from said first end toward but not to said second end ... wherein said piezoelectric layers are polarized in the thickness direction thereof only at the region where the first and second electrodes overlap".

Tabota discloses an acceleration sensor having a first electrode (45) extending from a second end of a laminate toward but not to a first end, and a second electrode (46) extending

from the first end of the laminate toward but not to the second end (col. 5, lines 55-65; figures 4-8). Tabota's laminate has only two piezoelectric layers (43, 44).

The examiner relies upon Kondou (col. 4, lines 18-30) for a disclosure of benefits of multiple piezoelectric layers including providing, for the same thickness, 1) greater force and 2) the same movement at a lower voltage (answer, page 3). Even if Tabota's laminate had more than two piezoelectric layers, however, the electrodes would not be provided respectively and alternately at each interface between the piezoelectric layers. The reason is that Tabota would have, at an interface between the interfaces at which the two electrodes would be positioned, an intermediate electrode (47) which does not extend to either end of the laminate (col. 5, line 65 - col. 6, line 2; figures 4-8).

For a suggestion to eliminate Tabota's intermediate electrode the examiner relies upon Harnden or Koal. Without citing any particular portions of these references the examiner argues (answer, page 3): "Each of Harnden and Koal teach that polarizing only the active area of a piezoelectric elements [sic] reduces mounting stress stray signals and provides a place to attach lead wires."

For a *prima facie* case of obviousness to be established, the teachings from the prior art itself must appear to have suggested the claimed subject matter to one of ordinary skill in the art. See *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976). The mere fact that the prior art could be modified as proposed by the examiner is not sufficient to establish a *prima facie* case of obviousness. See *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992).

The examiner merely asserts that each of Harnden and Koal teach that polarizing only the active area of a piezoelectric element reduces mounting stress stray signals and provides a place to attach lead wires. The examiner does not establish that Harnden or Koal actually provide such a disclosure. Moreover, the examiner does not take into account the differences between the structure of Tabota and those of Harnden and Koal and explain why, regardless of these differences, Harnden or Koal themselves would have led one of ordinary skill in the art to eliminate Tabota's intermediate electrode.

The examiner argues that "Koal is explicit that the 'edge' and 'tail' areas should not be piezoelectrically active (col. [sic] Ln 51-59), which has the same operating effect as not polarizing those regions" (answer, page 5). The examiner

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apparently is referring to lines 51-59 of column 4 of Koal,  
wherein Koal states:

As shown in FIG. 1, the entire connecting tail and the peripheral border of the sensor body outside the foil connecting plate would all be etched so as to be inoperative in piezoelectric effect. This etching is not necessary for the functioning of the piezoelectric sensor but it is desirable to eliminate irregularities and electrical noise caused by imperfections in the plastic material, especially about the periphery of the sensor where such imperfections are most probable in occurrence.

The examiner does not explain, and it is not apparent, how this disclosure would have led one of ordinary skill in the art to eliminate Tabota's intermediate electrode.

As indicated by the above discussion, the examiner has used impermissible hindsight in rejecting the appellants' claims. See *W.L. Gore & Associates v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); *In re Rothermel*, 276 F.2d 393, 396, 125 USPQ 328, 331 (CCPA 1960).

The examiner argues that "there are many well known, common sense reasons to limit the polarized or active area of a piezoelectric device. Harnden and Koal just teach some of them" (answer, page 5). This argument is not well taken because "[c]ommon knowledge and common sense," even if assumed to derive

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from the agency's expertise, do not substitute for authority when the law requires authority." *In re Lee*, 277 F.3d 1338, 1345, 61 USPQ2d 1430, 1435 (Fed. Cir. 2002).

For the above reasons we conclude that the examiner has not carried the burden of establishing a prima facie case of obviousness of the appellants' claimed invention.

*DECISION*

The rejection of claims 1-8 under 35 U.S.C. § 103 over Tabota in view of Kondou and either Harnden or Koal is reversed.

*REVERSED*

	)	
TERRY J. OWENS	)	
Administrative Patent Judge	)	
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	)	
	)	BOARD OF PATENT
THOMAS A. WALTZ	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
PETER F. KRATZ	)	
Administrative Patent Judge	)	

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